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CITY OF FULLERTON
GENERAL PLAN

ENVIRONMENTAL MANAGEMENT ELEMENT
OF THE CITY OF FULLERTON
GENERAL PLAN

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May 1973

ENVIRONMENTAL MANAGEMENT ELEMENT

OF THE CITY OF FULLERTON

GENERAL PLAN

Fullerton Development services
department.

City planning
Conservation
Land Util.

Fullerton
"
"



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ENVIRONMENTAL MANAGEMENT ELEMENT

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GOALS, OBJECTIVES, AND POLICIES

Goal:

To provide conveniently located parks and recreational facilities which are responsive to the needs of all age and socio-economic groups.

Objectives:

To provide a minimum standard of four acres of park land per 1,000 population consisting of two acres of neighborhood parks and two acres of community parks.

To obtain an equitable distribution of parks and recreational facilities throughout the City.

Policies:

To plan parks and recreational facilities for the City as related parts of a unified, well-balanced park system.

To continue to encourage developers to provide parks and recreational facilities within their developments.

To acquire land for parks and recreational facilities in conjunction with the development of open space areas.

I PARKS

INTRODUCTION:

As leisure time becomes more readily available, the demand for recreational facilities greatly increases. The past deficiencies in park acreage become more pronounced as society's need for recreational facilities expands. In order to deal with past deficiencies and future needs for park facilities, a study method is needed upon which decisions can be based. The purpose of the Parks section of this Element is to provide a system which will deal with past deficiencies in a rational manner and also help prevent future park deficiencies from occurring when the development of undeveloped areas takes place. Parks are viewed as the major source of open space in developed areas and as such become an integral part of the open space plan for the City of Fullerton.

to residency does not play a major role in the decision of the populace to use the park, whereas, the specific service obtained through the park does.

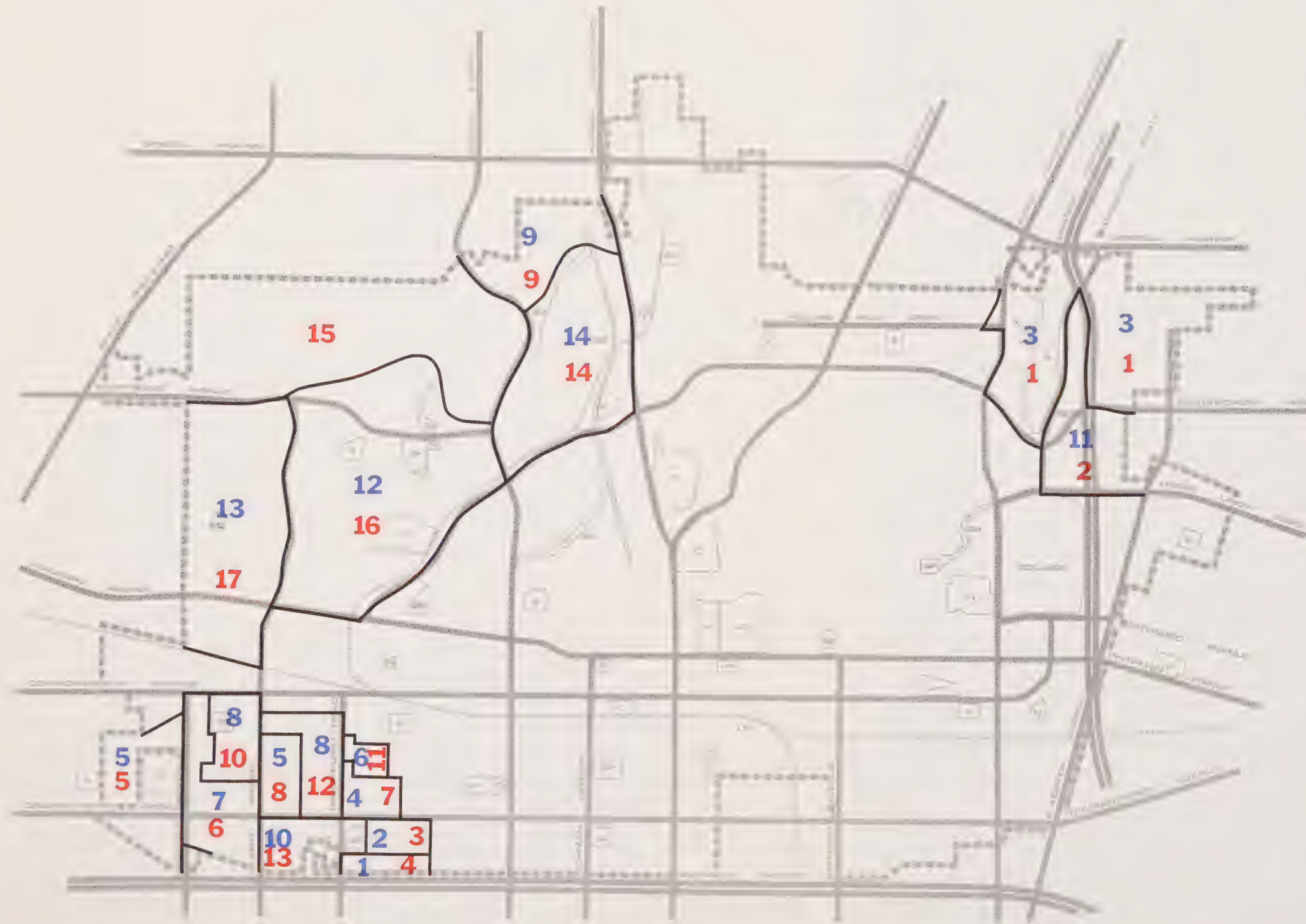
Due to the uniqueness of a special use park, service area does not become a factor in the location of sites, while specific physical features of the site do. A site may be chosen on the basis of preserving physical features which may be diminishing within the City boundaries. Special use parks may prove to be advantageous in preserving the natural character of the undeveloped hills that lie within the northern section of the City.

The City of Fullerton contains two special use parks within its boundaries: Laguna Lake and Hiltcher Park. Laguna Lake provides a water-oriented recreational environment and Hiltcher Park provides a natural terrain environment.

Community Parks

After researching different theories as to the relative reach of a community park's service area, it was decided to use a radius of 1 1/2 miles. Ideally, a community park is located adjacent to or near a secondary school sharing the same service area boundaries. The facilities located in community parks are designed to serve young people fifteen years of age and older, family groups, and senior citizens. Typical of the facilities are sport fields, tennis courts, large playgrounds, picnic areas, bandstands or outdoor theaters, swimming pools, recreation buildings, arts and crafts workshops, teen centers, and senior citizen facilities. To provide for these facilities and landscaped open space, the community park ranges in size from sixteen to sixty acres.

The areas served by community parks are determined through the examination of the service area reach for each park that lies within and outside the City limits. After the serviced areas within the City are determined, the major task becomes one of providing a system that evaluates the difference in need for the nonserviced areas that have been revealed. The first step is to rule out all existing nonrelated land usage, industrial, commercial, institutional, and office-space, from the study. Lot size and building density are then grouped into four major categories, the higher densities creating a greater need for park facilities than lower densities. Although this information does not constitute a decisive role in the need for park facilities, it does reflect the general availability of open space that may be used for minor active recreation at the place of residency.



Population densities are then obtained for each of the block groups that have been established in the 1970 census. These data are then grouped into four different categories and recorded on an overlay. High Schools are viewed as providing a secondary type of community recreation, hence, the service area for each of the high schools that affects the City is determined.

The above information is recorded on separate overlays which are then compiled to form a composite overlay. The composite overlay is used to establish the priority ratings for nonserviced areas.

The configuration of each of the priority areas was established by the 1970 census block group boundaries due to the fact that much of the information used in the study was obtained within these general boundaries.

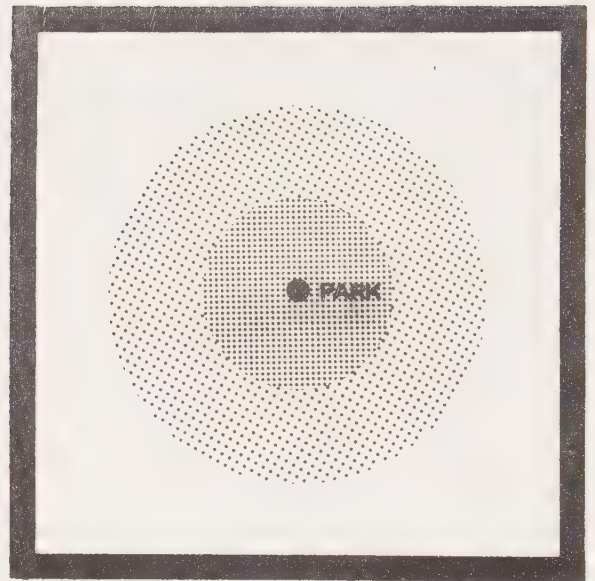
Once the different priority ratings had been recorded, it was found that the greatest need for community park facilities exists within the southwest section of the City, and, therefore, this area should receive the greatest amount of attention at the present time.

The information that had been dealt with in the study of existing park needs was projected ten years into the future to determine what service needs would be coming into existence. The conclusion of this phase of the study shows that there will be high priority need moving toward the northeast section of the City which is a direct result of the medium-density development that is now taking place and will continue in the previously undeveloped section of the City.

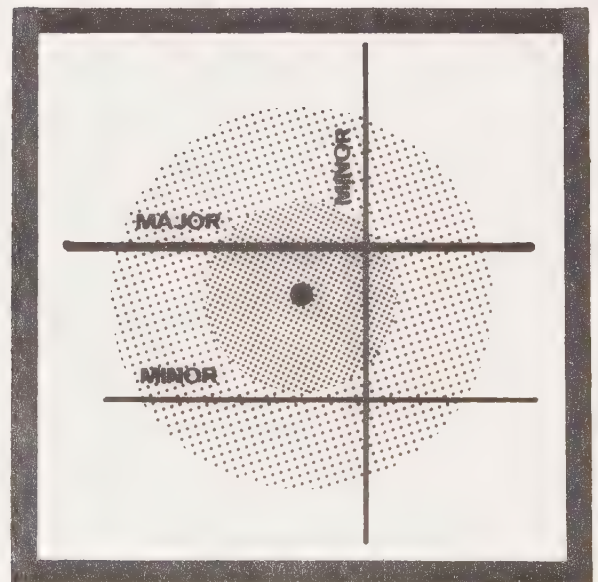
Neighborhood Parks

A neighborhood park is one which is located in a small residential area with a maximum effective service radius of about one-half mile and typically contiguous with the service boundaries of an elementary school. The neighborhood park is often adjacent to or near the school. While providing for the recreational needs of several age groups, the neighborhood park caters to the needs of the younger age groups. Tot lots with children's play equipment, basketball courts, wading pools, handicraft facilities, small meeting rooms, and free play areas with landscaped open space are among the potential facilities and features of the neighborhood park. Depending on the number and kinds of recreational facilities, the neighborhood park ranges in size from one to fifteen acres (but is generally in the three to six acre range).

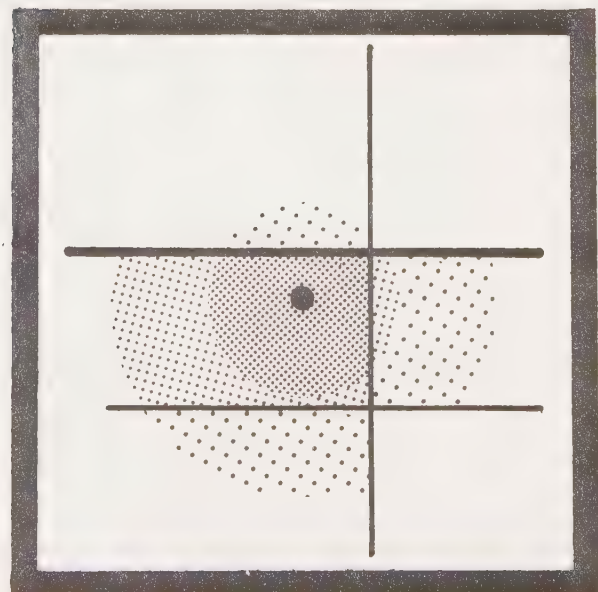
STEP 1 SERVICE RADIUS



STEP 2 BARRIER EVALUATION



STEP 3 SERVICED AREA



When examining the service area of neighborhood parks, it was found that since walking distance plays an important part in the actual service quality of the parks, other factors must be considered besides the standard radius of service. A great amount of attention is given to the age groups of fifteen years of age and younger and sixty years of age and older and how the people in these groups may be affected by physical features within the radius of the service area. The primary reason for looking at these age groups is that they are the age groups that have the least accessibility to transportation services and therefore rely primarily on walking as a means of their mobility. Due to this factor, it was felt that the evaluation of service areas for neighborhood parks would have to be developed into a rating system that would reflect the quality of service within a given radius of service. Upon researching conventionally used radii of service used in evaluating neighborhood parks, it was found that two acceptable distances have been established, 1/4-mile radius and 1/2-mile radius. These radii become the first factor in the rating of serviced areas. Areas found to be within a 1/4-mile radius of a neighborhood park are given a rating of one and the areas existing between 1/4-mile radius to 1/2-mile radius a rating of two (see step 1).

Physical barriers that exist within the serviced areas are examined and fall into two major categories: those which present safety problems to pedestrians such as major arterial streets with large amounts of traffic flow, and those which create access problems such as flood control channels, railroad tracks, and freeways. Barriers which create a safety problem are grouped into two types, major barriers which create the greatest hindrance and minor barriers which create less of a hindrance. Major barriers are considered to diminish a service area's rating by a factor of two and minor barriers by a factor of one. Access barriers are considered to be impassable and hence are looked upon as eliminating service by a park at the point where the access barrier cuts across the particular service area (see step 2).

The physical barriers are combined with the radius ratings of a given park's service area in order to determine the actual quality of service that a park is contributing to its surrounding geographic area (see step 3). This system is applied to all existing parks in order to obtain the actual areas that are now being serviced by park facilities within the City.

The system that is used in determining priority rankings of nonserviced areas for community parks is incorporated into the evaluation of those areas not serviced by neighborhood parks. The specific data included in the evaluation are nonrelated land use; population density per acre; building density; percent of the population fifteen years of age and younger; percent of the population sixty years of age and older; and areas that are serviced by elementary schools (elementary schools are viewed as providing similar

EXISTING PARK EVALUATION

	POPULATION SERVED								ACREAGE													EXISTING DEFICIENCY			
	500	1000	1500	2000	2500	3000	3500	4000	1	2	3	4	5	6	7	8	9	10	11	12	13	EXISTING	DEFICIENCY	EXISTING	PRIORITY RATING
ACACIA																									
ADLENA																									
BYERRUM																									
CHAFFEE																									
CHAPMAN																									
FERN																									
GILBERT																									
GRISSOM																									
HERMOSA																									
LEMON																									
NICOLAS																									
ORANGETHORPE																									
RICHMAN																									
SAN JUAN																									
VALENCIA																									
WHITE																									
WOODCREST																									

■ TOTAL PARK ACREAGE

■ SCHOOL ACREAGE

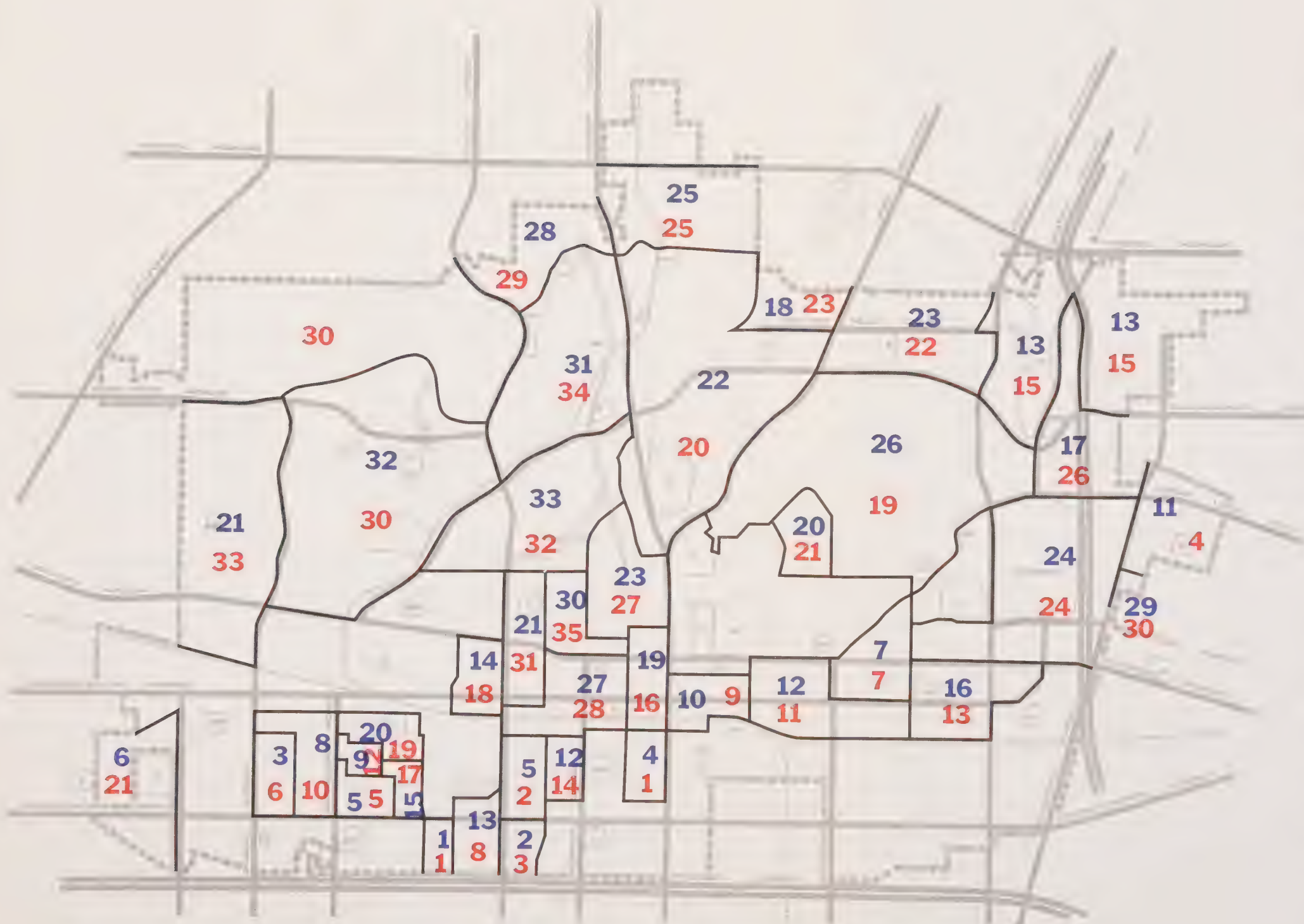
PAF NEIGHBORHOOD PARKS

PRIORITY RATINGS

BOUNDARIES

EXISTING RATING

FUTURE RATING



PARKS PARKS PARKS PARKS



recreational services). By combining the overlays displaying the above information, a composite overlay is formed through which existing priority rankings are obtained. The resultant map indicates the existence of high priority needs within the southwest section of the City.

The above data are then projected for the year 1980 in order to determine the pattern of future priority needs. Again the major priority needs fall within the southwest section of the City. It may then be concluded that the major need for neighborhood park facilities exists within the southwest section of the City and will continue to exist within this area in the near future.

Having determined the serviced areas for each of the existing neighborhood parks, it is possible to estimate the total amount of population that resides within each service area from 1970 census data. By comparing the population served by an individual park to the recommended standard of two acres of neighborhood park land per 1,000 population (recognized as a standard in the Fullerton Goals Report), it is possible to identify those parks that have a deficiency in site acreage. Priority rankings are established for those parks that are found to be deficient in size. This ranking is accomplished by the use of the same method utilized in determining priority rankings for nonserviced areas. Future needs are projected in order to obtain future deficiencies and priority rankings for existing neighborhood parks.

It must be noted that some of the existing park acreage is under the control of the Fullerton Elementary School District as their share of a school/park facility. Should any of this school district park acreage be removed from park use, the City should commit itself to replacing the facility.

Mini-Parks

Mini-parks are a useful means of providing a minimal amount of recreational space within developed areas, such as the southwest section of the City. They may be acquired through the purchase of small parcels of land, which are then developed into recreational facilities, or by the use of a street closure system, which is the closing of streets that play a minor role in the access of an area and then developing it into a pocket park. Truslow, which is the only publicly-owned mini-park within the City at the present time, is located in the southern section of the City and consists of .13 acres of land.

ACQUISITION PROGRAM

Acquisition of Park Land in Developed Areas

Once the priority areas had been determined for both community and neighborhood parks, a field study was conducted for possible sites that might exist within the high priority areas. Upon examination of the high priority areas it was found that there were no adequate vacant sites available for park facilities at the time the study was conducted and that adequate sites existed only in areas of moderate to low priority needs. Rather than selecting sites in the moderate and low priority areas which would direct attention away from the southern section of the City, the priority system should be viewed as providing a guideline for acquisition of recreational land within developed areas.

The following steps are proposed as guidelines to be used by the City in acquisition of park land within developed areas:

- 1) Determine available funds for the acquisition of a park site.
- 2) Conduct a field survey of priority areas, starting with the number one priority area and working toward the last priority area until a potential site is obtained.
- 3) Determine the effective service area of the potential site by applying the standards used to evaluate the different types of parks.
- 4) Determine the population which resides within the service area of the potential site.
- 5) Determine if the site is of adequate size by using the standard of two acres of park land per 1,000 population.
- 6) Check for potential future population densities within the service area in order to determine if the site will be of sufficient size in the future.

METHODOLOGY

The overall category of parks that lie within the City of Fullerton has been divided into six sub-groups.

- | | | | |
|-----|-------------------|-----|------------------------------|
| (1) | Regional Parks | (4) | Neighborhood Parks |
| (2) | Community Parks | (5) | Mini-Parks |
| (3) | Special Use Parks | (6) | Greenbelts and Trail Systems |

The study of Fullerton's park system is carried out on two levels, the first is to determine the actual area serviced by each of the different types of parks, and to then develop a system that will enable the ranking of non-serviced areas by different priority needs. The second level is to evaluate existing parks on an individual basis so as to determine their specific needs. Priority rankings are established for those parks that are found to be deficient in acreage for the specific population located within the individual park's service area.

An overlay technique is used for the evaluation of both serviced and non-serviced areas. On each overlay a given bit of information is grouped into four categories ranging from greatest need, recorded in a light shade, to least need, recorded in a dark shade. The combination of the different overlays forms a composite overlay which represents the result of a particular study. The composite overlay consists of varying shades of gray and is viewed in the same manner as a photo negative, the lightest shade representing the greatest need and the darkest shade representing the least need.

This Element includes a separate section dealing with the existing park situation (as of July 1972) and the areas served by this park system as well as the existing and projected needs for additional park facilities. The City park system and the program to enlarge and improve service to all residents and visitors to Fullerton will remain as the major resource in the City's open space plan.

For purposes of this Element, the definition set forth in the UCI-Project 21 Study Team report on Open Space in Orange County will be used. Open space shall be considered "rural or urban landscape used to maximize natural and spatial values." The report goes on to say, "Interpretation of this definition includes recognition of traditional open space functions--recreation, scenic beauty, and wildlife protection, as well as acknowledgement of its newer applications--to enhance air and water quality, public safety, physiological and psychological well-being, and to serve as a force in shaping urban development."

GOALS, OBJECTIVES, AND POLICIES

Goal:

The enhancement of the environmental quality of the City through the protection, preservation, and creation of open space and scenic areas.

Objectives:

The preservation of natural open space so as to retain the geographic identity of the City.

The preservation for public use of scenic areas and vista points which lie within the City.

The creation and preservation of visual and active open space in already developed areas of the City.

Policies:

To shape and guide development and help prevent further urban sprawl.

To prevent urban development from encroaching on those areas which may prove to be hazardous to the public health, safety, and welfare.

To prevent development on those parcels of land which have unique beauty and value to the City.

To protect the natural environment from development techniques which will permanently disfigure or significantly alter the natural terrain.

To require the creation of open space within newly urbanizing areas through the use of the Greenbelt concept as designated in the Land Use Element of this General Plan.

To coordinate all City functions which may have an impact on the physical environment with other governmental jurisdictions and private organizations in order to insure the creation or preservation of needed open space.

OPEN SPACE INVENTORY AND PROGRAMS

Fullerton's open space has been categorized according to the system used by the Orange County Planning Department. The County system was devised for cataloguing purposes and includes some types of open spaces not found in Fullerton. This Element will list those types of open space land available in Fullerton and indicate, where applicable, possible actions or programs for their preservation.

Recreation Land

Recreation land includes local and regional parks, hiking and riding trails, public and private parks and recreational facilities, and special purpose areas such as the Municipal Golf Course at the Brea Dam site.

The subject of local and regional parks is addressed more fully in the Parks section of this Element. Local parks represent the City's major means of securing open space in already developed areas.

Fullerton currently has two regional parks. One is of a specialized nature, the Municipal Golf Course, and the second is the Fullerton Dam Regional Park, completion of the first phase is expected in 1973. Both park sites must be left open since they are Federal Government flood control basins subject to inundation during periods of heavy rainfall. The Fullerton Dam Park will provide regional facilities such as day camping and picnicking, but will not serve the needs of East Fullerton in the capacity of a local park. Acquisition by the City and/or the County of the property directly to the east and west of the site will be studied while this land remains available.

The County is considering a third regional park in Fullerton along the Fullerton/Buena Park boundary. This property has been used as a borrow pit, the removal of soil for nearby construction sites, and is now available for other uses. The City actively promotes the development of this park.

Parts of Fullerton are laced with hiking and riding trails which primarily provide facilities for horseback riding, but which also serve as open space links between various communities and neighborhoods. These existing trails will be integrated into a City-wide system of connecting trails and expanded through the use of such facilities as flood control channels and utility easements. In addition, the recently approved bicycle trails system will be integrated with the other trail systems.

Fullerton has portions of two private golf courses within its boundaries, Los Coyotes Country Club on the west and Imperial Golf Course in the northeast. In addition, Hughes Aircraft owns and maintains Simpson Park as a private park for its employees. This park would serve as a community level park if it were open to the public. The City should consider attempting to obtain public access to the park. Should Hughes Aircraft decide it no longer needs the property, the City should consider the purchase of the property within the context of the parks study section of this Element. This park is valuable open space land and should remain in its present natural state.

Mineral Resource Land

The Land Use Element has proposed a greenbelt concept for Fullerton's oil lands in the Coyote Hills. This development concept would restrict grading, promote the clustering of homes and the creation of greenbelts, and would allow density averaging which would in itself help create open space. There are approximately 1,300 acres within the Oil Land/Greenbelt area which will be controlled through the Land Use Element. Gradual release of this land is expected over the next ten to fifteen years. Until such time as the land is released, it is expected that the oil companies will maintain the hills as open space. The controls included in the greenbelt concept will insure the maintenance of the greatest amount of open space feasible while allowing development in what are Fullerton's primary remaining undeveloped areas.

In order to implement this development concept, a detailed land use plan needs to be drawn up to show the location and intensity of future uses in the oil lands. As indicated elsewhere in this Element, the oil lands are subject to slide and erosion problems as well as being underlain with minor fault lines. Before arriving at a development plan these areas should be thoroughly studied in detail as to soil type, stability, reaction to earthquake, probability of earth slide, etc. These data will be made available in the Seismic Element of the General Plan. It is therefore the intent of this Element to require that the oil land remain undeveloped under the current zone of O-G, until such time as the Seismic Element has been completed. The data from that Element will provide the basic knowledge as to what type of development and its intensity and location is feasible, and where, due to safety hazards, property should remain open.

Upon completion and adoption by the City of the development plan, consistent zone changes may be granted allowing development to proceed at

the wish of the property owners. Areas designated as open may be transferred by title or easement to the City in order to relieve the tax burden on property owners. In addition, sites for public facilities such as schools and parks should be dedicated according to the adopted master plan as development occurs.

Scenic Areas

Studies of open spaces in Fullerton have isolated three types of scenic land. One type is the land along certain highways where a view of the surrounding region can be obtained or where the immediate vicinity has scenic value. The second type of scenic land is where a vista can be seen from a particular point. The third type of scenic lands are those which in themselves possess natural aesthetic quality.

The City's scenic highways can be divided into two categories for the purposes of control of development. The first category relates to those highways where no additional controls are needed. They have been shown in order to alert the City to their value as scenic highways. This designation should be considered in all future City action relating to these highways. Areas of value in this category include:

- 1) Rosecrans Avenue from the western City boundary to Euclid Street,
- 2) Euclid Street between Malvern Avenue and Las Palmas Drive,
- 3) Harbor Boulevard between Brea Boulevard and Las Palmas Drive, and
- 4) Brea Boulevard between Harbor Boulevard and Bastanchury Road.

The second category of scenic highways relates to highways where development along the roadway would cause the loss of valuable open space. The right-of-way for highways under this designation should be enlarged and/or included in the highway beautification program conducted by the Public Works Department. An area by area approach to determining the right-of-way needed to preserve the view obtained from the highway and amenities now available because of the vacant lands adjacent to the right-of-way is needed so that the City can include the necessary acquisition

and improvements in the Five-Year Capital Improvement Program. The objective of such acquisition and improvement is to preserve for future times the beauty of the view of and from the hillsides traversed by these scenic highways.

The areas of special concern in this classification are:

- 1) From the intersection of Harbor Boulevard and Bastanchury Road easterly along Bastanchury to a point one-half mile west of the intersection of Bastanchury Road and Brea Boulevard,
- 2) From the intersection of Bastanchury Road and Associated Road westerly along Bastanchury to a point one-half mile west of State College Boulevard,
- 3) From the intersection of State College Boulevard and Yorba Linda Boulevard northerly along State College to the intersection of State College Boulevard and Rolling Hills Drive, and
- 4) On the east side of Harbor Boulevard, from the intersection of Harbor Boulevard and Bastanchury Road northerly along Harbor to the grade crossing of the Union Pacific Railway.

There are two vista points in the northeastern portion of Fullerton which have unique value in the view they provide. One of the vista points has a 360° view enabling one to see Newport Beach, Irvine, Catalina, Long Beach, Palos Verdes, the Channel Islands, Santa Monica Bay, the Los Angeles core, the San Gabriel and San Bernardino mountains, and Mt. San Jacinto. The other vista point has a somewhat restricted view, but still provides the opportunity to see the sites listed above except for Catalina, Long Beach, and Palos Verdes. The first vista point described is the parcel of land along the north side of Skyline Drive near Acacia Avenue. The second vista is at the intersection of Bastanchury Road and State College Boulevard.

Gas tax funds available to the City should be used to purchase additional rights-of-way for a public rest stop at the site of the vista points identified above. Further, larger areas should be designated as vista park sites at these points in the development for the oil lands described above.

The Oil land/Greenbelt section of the Land Use Element identified twelve potential vista points in the West Coyote Hills and provided a ranking system for them. As the seismic and geologic data is made available and as the master plan for development is drawn up, these points should become an integral part of the plan for parks in the oil lands. These sites will not take the place of neighborhood park facilities but should be considered as special use parks for all residents and visitors to Fullerton.

The land area south of the Skyline vista point has been designated as a scenic area. This designation is a function of the value of the vista point as well as the intrinsic scenic value of the parcel itself. The Development Services Department should be instructed to begin evaluation studies and negotiations with property owners to obtain an open space easement or dedication for open space purposes of this valley running south of Skyline Drive. This project will require some funding since the property owners will be entitled to compensation for the loss of the use of their property.

The area to the south of the designated right-of-way for Rolling Hills Drive east of the Orange Freeway has been shown as another scenic area. The designation of this area was made so as to preserve the stream bed and attendant foliage which traverses this area. As development occurs on this site, the stream should be dedicated as a flood control easement with sufficient width required to allow it to remain in its natural state while still providing flood protection.

Flood Control Channels, Basins, and Plains

Fullerton's two dams, under the control of the U.S. Army Corps of Engineers, have created flood basins for use in the event of a major rain storm. These flood basins are being used as the Municipal Golf Course and the the County's Fullerton Dam Regional Park described above in the section on Recreation Land. The Corps of Engineers has flowage easements on additional flood plain lands behind Brea Dam. These areas will remain open under the Corps of Engineers' control.

The County Flood Control District maintains several flood channels throughout the City which have not yet been lined with concrete. The City should encourage, consistent with adequate flood control methods, the District to leave these channels in their existing state as long as possible and should further encourage the District to purchase flood plain lands which would remain open as opposed to constructing engineering facilities to protect against the dangers of major floods. A landscaping program for lined and

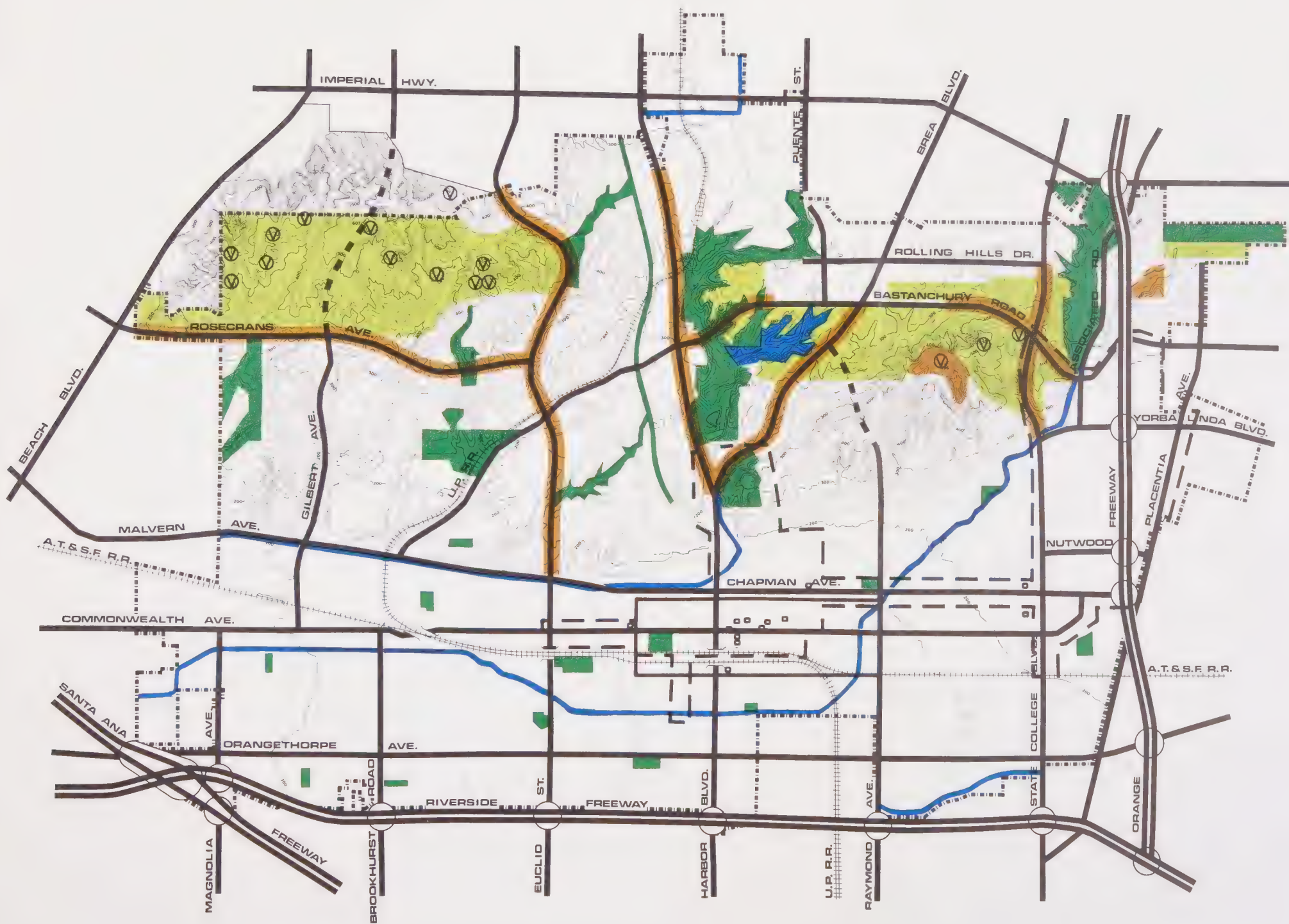
unlined channels should be initiated through City and County cooperative efforts.

The City has two courses of action which can be followed in achieving its objectives with regard to flood control channels. First, an affirmative action program, primarily between the City and the County Flood Control District for use of rights-of-way for trail purposes is now in operation and should continue. This should be expanded to evaluate the potential of a trail system along existing flood channels where no further work is planned as well as where improvements are under consideration.

The second course deals with the review of Environmental Impact Reports for any improvements to be made to existing or new facilities. An Environmental Impact Report is to include a discussion of the impact of the project (aesthetic as well as functional), a discussion of mitigating measures designed to reduce adverse effects, and a discussion of alternatives to the project. Thus, the Environmental Impact Report should consider those aspects of improving a flood channel with which the City is concerned (aside from the provision of better flood protection). These aspects include the loss of the "natural" appearance of the channels, the possibility of some compromise, through design, relating to appearance, and the possibility of using flood plain designation and subsequent restrictions rather than large scale engineering improvements.

Transit Ways

The Union Pacific Railway line from the northern City boundary to Malvern Avenue serves as visual and, in some areas, usable open space. The City should endeavor to obtain an easement for riding trails or purchase outright the twenty-eight acres along the Union Pacific line between Malvern Avenue and Euclid Street.



SERVATION CONSERVATION CONSERVAT

open space and
other unique areas

- boundary of civic district
- boundary of original townsite
- recreation lands
- greenbelt concept lands
- flood control areas
- scenic and natural areas
- ⊙ vistas
- unique historical sites



fullerton general plan
development services department

OPEN SPACE ZONE

Until such time as the master plan of development for the Oil land/Green-belt areas has been adopted, the current zoning, O-G, should remain. The O-G zone allows only those uses relating to drilling for oil and gas, some outdoor recreational uses, and agricultural uses. This zoning will protect and maintain the property in its existing state until development consistent with this element can proceed.

III CONSERVATION

INTRODUCTION:

The actions recommended by this plan are not intended to maintain status-quo with regard to conservation but rather: to gain the initiative to conserve natural resources, scenic beauty, and other land and water resources whose retention is necessary for the continued maintenance of the quality of the environment and which is conducive to the life style of the inhabitants of Fullerton; to shape and guide the development of the remaining lands in Fullerton in order to achieve efficient growth that will not be detrimental to the quality of life for the present and future populace of Fullerton; and to prevent the development of areas which should be preserved for scenic, historic, and cultural conservation or for the public health, safety, or welfare.

This plan proposes goals and policies, suggests standards and criteria to be developed that would assist in the implementation phase of the General Plan, and recommends certain types of lands to be protected and preserved. Furthermore, this plan recommends that an Environmental Management program, to achieve and further the development and continued implementation of the various elements of the General Plan, be devised.

REQUIREMENT: STATE LAW

By State law (Section 65303 of the Government Code relating to local planning), all counties, cities and other local agencies are charged with the responsibility for the conservation, development, and utilization of natural resources including water and its hydraulic force, forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals, and other natural resources.

The conservation element may also cover:

- 1) The reclamation of land and waters.
- 2) Flood control.
- 3) Prevention and control of pollution of streams and other waters.
- 4) Regulation of the use of land in stream channels and other areas required for the accomplishment of the conservation plan.
- 5) Prevention, control, and correction of the erosion of soils, beaches, and shores.
- 6) Protection of watersheds.
- 7) The location, quantity and quality of the rock, sand and gravel resources.

Of those items listed above, only the areas that pertain directly to Fullerton will be covered in a section by section discussion.

GOALS, OBJECTIVES, AND POLICIES

Goal:

To conserve and utilize the natural and developed resources including water, land, air, wildlife, historical and cultural elements of the Fullerton environs, and to preserve and enhance those elements of the environment that are conducive to a desirable quality of life.

Objectives:

Develop methods to preserve the natural resources that abound within the Fullerton planning area.

Prevent any misuse of the environment that would cause detriment to the health, welfare, or safety of the Fullerton community.

Policies:

Encourage development that conforms to the natural environment.

Require all developments to be cognizant of the impact they would impose on the immediate and surrounding environment.

Encourage the preservation of unique features of historical and cultural value.

Impose standards of environmental use that safeguard the basic elements of the environment.

Develop an evaluation and review system to periodically measure and control the quality of the environment.

PRIORITIES

The following criteria appear to be those most pertinent to setting Conservation and Open Space priorities:

- 1) Public Health and Safety. Most domestic governmental decisions, Public Health and Safety factors should be given first consideration in resolving Open Space and Conservation issues.
- 2) Natural Resources Conservation. The natural resource of greatest importance to Fullerton is the inventory of remaining undeveloped lands. Once developed, they are lost forever.
- 3) Scenic and Historic Preservation. Within the Fullerton boundaries lie scenic and historic areas of great value. Since these areas are unique, they must be preserved for all to experience, because once they are developed or redeveloped, they too are lost.
- 4) Recreation. Recreation needs must follow scenic and historic in priority. Scenic and historic preservation is related to recreation in the potential use of resources by the public.
- 5) Preserving Community Identity and Limiting the Scale of Urban Growth. Communities can be individually identified by the difference between their neighboring communities and themselves by physically announcing it with a change in visual perception. Most often this is done by a segment of open space which is preserved to maintain community identity.
- 6) Minimizing the Real Costs of Development. Often, the long range costs of urban development are not absorbed by the developer or his clients, but by the public at large. By preserving in open

space those lands that would cause future problems, the added cost to the developer's client and the general public at large will be minimized.

- 7) Enhance the Tax Base. Open space, particularly scenic and recreational, is a factor that draws new development into an area. If this development is one that has a higher revenue than cost factor it will enhance the tax base of the City.

CONSERVATION SCHEME

"Core" Open Space Lands

There is a basic series of open space lands that warrant preservation because of their intrinsic qualities. These lands should comprise the core of any conservation or open space scheme. In addition, various alternatives and supplementary possibilities deserve examination and comparison. One or a combination of these variations should be selected as the basis for the Conservation scheme of this element.

The following types of "core" open space lands are recommended for preservation regardless of which conservation or open space scheme is followed:

- * Existing parks, planned parks (allocated park lands), and other recreation areas.
- * Existing private recreation areas (golf courses, etc.).
- * Publicly and individually owned lands with scenic assets (vista sites) and/or recreation potential; flood plains and water courses; lakes and reservoirs and surrounding watersheds.
- * Stream valleys, valley walls, and narrow ravines.
- * Steep slopes, typically those over twenty-five percent.
- * Unique geologic features, plant communities and wildlife habitats.
- * Cultural and historic sites, including paleontological and archaeological sites.
- * Existing and potential hiking, equestrian and bicycle trails.
- * Earthquake faults and other geologic hazard areas.

Land Bank

Fullerton, at the time of this writing, has used virtually all of its valuable low sloping agricultural lands for urban development of all types. If the City would buy property that has the potential for long range development that has no scenic or recreational value and lease back the right to grow specialty crops (grapes, or groves of Christmas trees, etc.) to those who are interested for this purpose, this property could be put in a land bank system to be developed at a later date. The holding costs in this method (lack of tax revenues) would be offset by the lease back agreement, plus the added potential of controlling the type of development applied to the land, both now and at a later date. Perhaps such lands should not be sold for private development even then, and held further to accommodate unforeseen future needs. However, in certain cases, surplus public lands can be used to trade for especially desirable private open spaces that are feeling the pressure of development. By buying or trading for these prime properties, they can be saved from improper development and maintained in their uniqueness as open space.

By the use of this land banking system, Fullerton could limit and shape the future growth to that which would be conducive to achieving community identity.

MINERAL RESOURCES

Petroleum

The oil production in the Coyote Hills has been producing an average of three million barrels of crude oil per year since the turn of the century. With new production methods in use, this source of oil will be depleted, by latest estimate, anytime from 1978 to 1982. When this occurs, the oil companies will be anxious to turn this land into another productive use, most likely residential development.

Before any other developments can occur in the Coyote Hills, there will have to be a well thought-out long range development plan devised. This plan shall show how the area will be rehabilitated, how the geological hazards will be treated and averted, how and to what extent public services will be required, and what the relationship will be between the proposed development and the unique natural open space.

Sand

Another natural resource in the West Coyote Hills that is currently being used is the superior grade of construction sand. When the final development plans are arrived at, the oil and sand resources will have to be dealt with in a manner that reflects a preservation of the natural environment. The oil resources will be depleted in their normal manner, while the sand borrowing area shall be strictly controlled so that the operation is compatible with the new development.

This sand, while important to the construction industry, is also shaped in a very aesthetic, undulating series of knolls. Some of these are rather steep, far exceeding the 25 percent slope areas designated on one of the following maps. In fact, there are a few areas that are sheer cliffs. While some of the areas have intrinsic value as they are, some would have to be reshaped to be more compatible to development. This could mean leaving small portions available for removal until development has closed in on its proximity. This procedure would allow some use of this resource until such time as development and sand removal start to conflict with each other. The areas that could be used for sand removal would have to be approved along with the development plan.



water and mineral resources

- boundary of water recharge area
- water well locations
- original extent of oil pool
- present extent of oil pool
- sand deposit

CONSERVATION



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LAND ALTERATIONS

Land forms are changeable both by man and by nature. This section reviews several of the methods that man uses to change the shape of the land and nature's evolutionary process of erosion.

Developable land is a vanishing resource in Fullerton. About 2,000 acres remain yet undeveloped, lying mostly in the Coyote Hills. Because land is becoming a valuable resource, it must be used in a manner that reflects the greatest and best use possible.

There are many ways that land can undergo change. Man's major means for altering the landscape takes the form of grading operations, whether it be leveling for a building pad or extensive cut and fill operations.

Erosion

Erosion is one of the major threats to the capabilities of the land. Erosion is a water and/or wind-created problem that removes soil from the area in which it was formed or deposited. This phenomenon is a natural event that is responsible for the formation of many of the existing soil groups. However, this natural process may be tampered with by human intervention with occasional catastrophic results.

Various soils and soil groups are naturally more susceptible to erosion than others. Human activities such as road building, off-road vehicle use, changes in water drainage, increasing water runoff amounts, may tremendously accelerate the erosion process and create irrevocable damage to the natural environment. Human activities, if misdirected or ignored, may create erosion problems in various areas where previous threat by erosion elements was nonexistent or at least minimal in extent. A prime example of this type of activity is off-road vehicle use which destroys vegetative cover and compacts the soil surface allowing the erosion process by wind and water to have their maximum effect. When the soil loses its capability to support natural vegetation, both micro and macro wildlife are affected. Siltation occurs downstream and may damage other areas, both human-occupied and natural. Blowing sand and dirt also becomes a nuisance. Further, the loss of aesthetic natural beauty of the environment is extremely important.

Because capabilities of various soil groups are known and it is known that improper use of certain soil groups can create irreparable damage to both natural systems and human-created systems, it follows that any proper land use planning programs must utilize soil information in the decision-making process.

With the adoption of this element of the General Plan, control over those areas that are most susceptible to erosion should be implemented. In the Coyote Hills, along the northern boundary of Fullerton, these conditions exist in various stages. As seen by the preceding map, those areas that have a combination of extreme slope and fragile soil conditions are the most susceptible to erosion and landslide.

Landslide Hazard

Landslides are rated as the number two cause for monetary damages due to natural hazards. It has been estimated that landslides alone will cost California residents and builders more than \$42 billion in the next 27 years (year 2000). Natural hazards, in order of their potential monetary loss, are flooding, landsliding, depletion of mineral resources (by building over known mineral deposits), earthquakes, soil expansion, tidal waves, fault displacement, erosion, groundwater, subsidence, and volcanic eruptions. Of the known hazards only flooding, landsliding, earthquakes, soil expansion, fault displacement and erosion would have any direct impact on parts of Fullerton.

The areas of greatest concern in Fullerton are located in the Coyote Hills on the northern boundary of the City. There is a past history of earthslides in this area which, even though ancient in nature, are subject to potential reactivation. The detection of these slides and controls needed due to hazards, should be administered by qualified geologists and engineers. With this information, proper land use planning and land conservation will avert any unwarranted loss either to human life or property.

Old slides usually are reactivated by cutting away the toe of a stabilized slide, thus removing part of its support. Another basic cause is adding to the weight on top, usually by grading hilltops to make "pads" for houses. Adding weight to the top of an ancient slide destroys the stability that was built up when the slide came to rest.

The basic reason for landslides is the type of earth that underlies slide areas and the steepness of the slope. Some materials can accommodate steeper

slopes than others, but each kind of material has its own individual "slip-angle".

Clayey soils have the greatest potential for slipping. They absorb and hold water which adds tremendously to their normal weight. Therefore, any slopes that have been stable may be weakened by heavy rains. The water not only weakens the slopes but it often adds enough weight to overcome the resting friction which is enough to cause the slide.

Another cause of landslides in Southern California is that the sedimentary soils that lie under a great part of the area are layered (bedding planes). These layers are interspersed with clayey seams. When these seams absorb water and become slippery, whatever is above them can slip very easily.

Still another important reason for landslides in Southern California is that the area is highly faulted with cracks running in every direction. This system of fractures and faults negates any strength that could be derived by a more cohesive mass. When water is a factor in clay seams, this broken mass offers very little resistance to slipping.

This condition exists in the Coyote Hills in the northern part of Fullerton. The Coyote Hills have both the history and the potential for landslide and fault displacement.

Soil Expansion (Shrink-Swell)

Soils that are unstable are generally localized and require precise mapping for planning purposes. General data on the soil conditions in Orange County and Fullerton are being collected and analyzed by the Soil Conservation Service, U.S. Department of Agriculture. For purposes of this element, certain soil types and association characteristics that show up as unstable will be denoted. Included as unstable soils are shrink-swell soils that expand and contract depending upon moisture content.

The volume of change in soil is influenced by not only the amount of moisture absorbed, but also by the amount and kind of clay that is present. In general, the soil with the greatest content of expansive clay shrinks and swells the most.

Expansive soils, such as Altamont Diablo clay are a major problem in planning the construction of roads, homes, and other types of structures. Expansive soil problems can normally be overcome by employing appropriate

design measures such as better grading techniques, engineered footings and reinforced foundations. However, these precautions generally increase the cost of the structure significantly.

Not normally thought of as unstable, the vast expanse of alluvial soils underlying the greater part of Fullerton are highly susceptible to ground motion associated with earthquakes.

Sloping Terrain

Homes built on steep slopes cost more to build and maintain than homes built on more level sites. Furthermore, development on steep slopes causes special problems in location and construction of access roads, excavation of the site, landscaping, and erosion control. Slopes of 10 to 25 percent cause modest problems in the construction and maintenance of building pads. On slopes of 25 percent or more, the problems become much more severe.

Approximately 95 percent of the remaining vacant lands in Fullerton have some degree of slope. The sloping terrain varies from less than 5 percent to 50 percent and in some instances considerably more. Most of this topographic condition appears in the Coyote Hills along the northern boundary of Fullerton.

As seen previously in other sections of this report, these areas of extreme slope also have a number of other geological hazards underlying their existence. The combination of the steeply sloping terrain with all the other negative factors can cause severe problems.

Earthquake Fault Zones

California is the nation's leader in the number of reported earthquakes. Earthquakes reportedly will cost Californians about \$18 1/2 billion during the next 27 years (year 2000). Earthquakes have the potential to do more damage to property and human life than any other single geologic hazard.

The threat of serious fault displacement should be treated differently from that of earthquake damage due to shaking. The degree of damage is generally proportionate to the distance from the fault activity. Fault displacement damage is that suffered by buildings built directly on a fault system.

Knowledge about the location of active faults in California is being expanded by California Department of Mines and Geology. The Orange County Building and Safety Department will use this data on seismic activity and other geologic hazards to prepare a map showing the probability of the likelihood of damage for the entire county.

In Orange County there are four major known faults: the Christianitos, Newport-Inglewood, Whittier, and the Norwalk Fault which reportedly runs under Fullerton in an east-west direction. These faults total approximately 48 miles. An additional 296 miles of smaller faults have been identified throughout the county.

According to the latest U.S. Geological Survey Map, Fullerton not only has the Norwalk fault to contend with, but also several mapped faults which underly the western portion of the Coyote Hills along the City's northern boundary. The last time any activity was recorded on the Norwalk fault was on July 28, 1769, with the estimated magnitude of 6.7 to 7.0 on the "Richter" scale.

Although studies have shown that there are a considerable number of faults in the Fullerton area, very few of these would be regarded as "active". The earthquake shocks that have been felt in Fullerton have resulted from epicenters located elsewhere in Southern California. This low seismic activity in Fullerton can be interpreted either as true geologic stability, or as an accumulation of strain along fault zones that are locked so tightly that even small earthquakes cannot occur. If the latter explanation is valid, our faults must be considered particularly dangerous in the future.

Recommendations

It is recommended that the City:

- * Establish a policy requiring extensive geological engineering reports on all projects that are influenced by sloping terrain.
- * Retain a consultant to carry out the investigation and analysis to satisfy the Seismic Element of the General Plan.
- * Direct the Development Services Department to develop a Hillside Development Zoning Ordinance to protect scenic and conservation

values, and taking into consideration the impact on soil mantle, vegetative cover, water resources, physiographic features, and other natural resources. The Ordinance should be developed to reflect the following:

- 1) Limit the alterations to natural land forms.
- 2) Limit the allowable earth movement in relation to degree of slope.
- 3) Allow no development (or only highly regulated and engineered development of very low density) on slopes of more than 25 percent.
- 4) Require retention of trees and other vegetative cover which stabilize steep slopes, retain moisture, prevent erosion and enhance the natural scenic beauty, and where necessary require additional landscaping to enhance the scenic and safety qualities of the hillsides. Those areas covered by a Hillside Development Zoning Ordinance that are to remain as undeveloped open spaces such as undevelopable slopes and natural landmarks, etc., or to be used for recreational purposes, may be offered, through dedication, to a governmental jurisdiction as part of an open space system. If, however, the governmental entity does not accept such an offer, the developer shall make provisions for ownership and care of the open space in such a manner that there can be the necessary maintenance thereof.
- 5) Require retention of natural landmarks and prominent natural features that enhance characteristics of a specific area (for example, the natural ridgelines) and impose appropriate conditions on development of all slopes to obtain conformity with the approved development policies in this conservation plan.



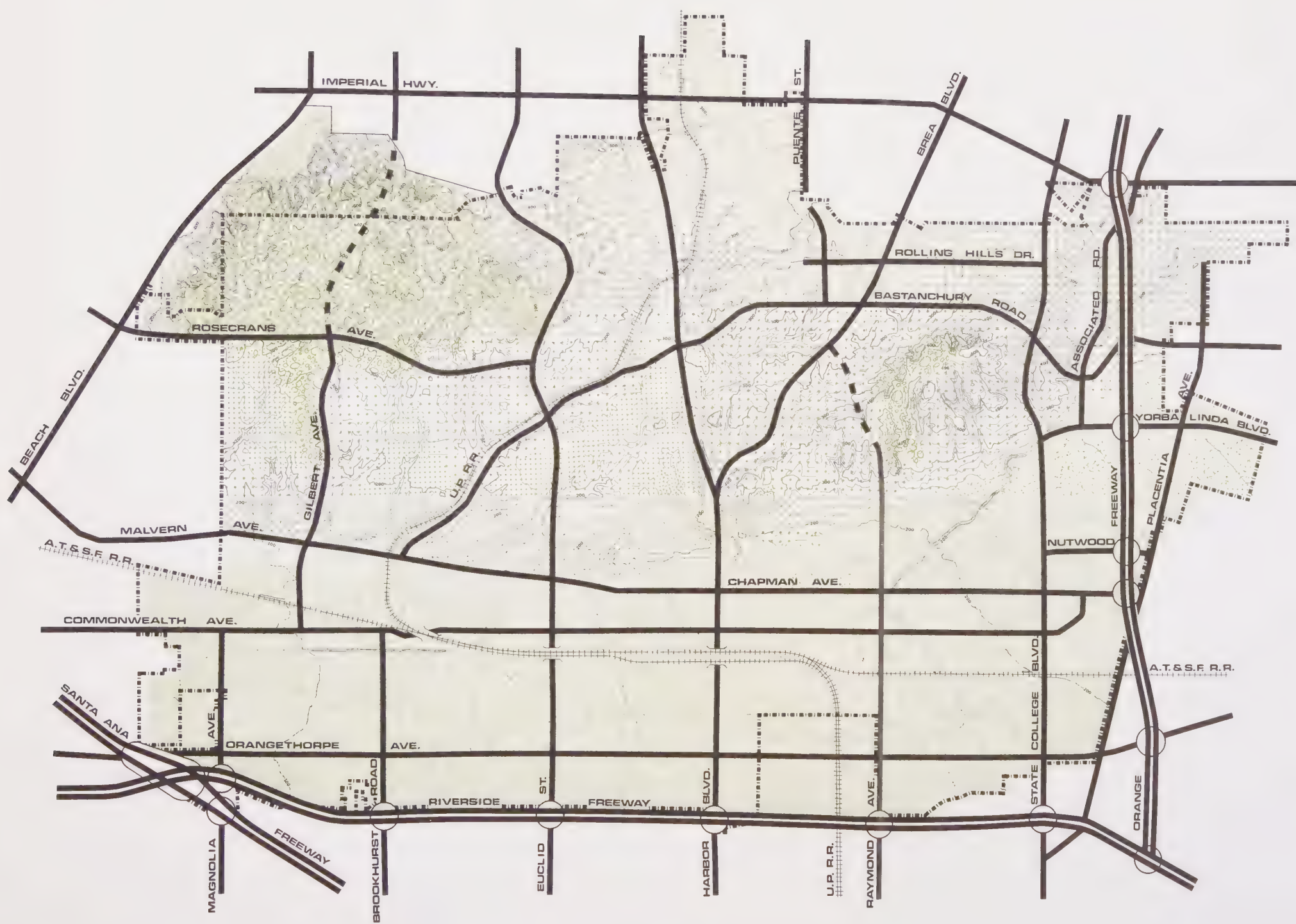
geologic hazards and slopes

- slopes over 25 percent
- earthquake faults
- inferred locations of earthquake faults
- landslides



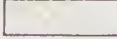
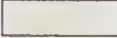
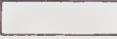
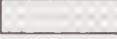
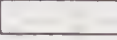
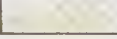
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SERVATION CONSERVATION CONSERVAT



SERVATION CONSERVATION CONSERVAT

soil capabilities

-  class 1 - very good
-  class 2 - good
-  class 3 - moderately good
-  class 4 - fairly good
-  class 6 - minor limitations
-  class 7 - major limitations



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soil shrink-swell

- low degree
- moderate degree
- high degree



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Source: USDA; Soil Conservation Service

AIR

Southern California, including Fullerton, with its ambient Mediterranean climate, is a very unique area. The semi-arid climate that permeates the region forms a part of the criteria for a variety of life styles found here. To enhance the variety of life styles that exist in this area, the climate and the air that we breathe must be protected from misuse. The air must be prevented from becoming so badly polluted that it cannot be rectified.

There are two sources that are responsible for the greatest amount of pollutants. Of the two, the motor vehicle is the most obvious villain. The annual increase in the use of motor vehicles and their subsequent emissions reduces the small gains made in curbing industrial pollution.

Air Pollution

It is well documented that the quality of the air has been steadily decreasing as urbanization and industrialization increase. Massive federal, state, and local programs are being considered in an effort to combat air pollution. Recent studies in Orange County indicate that unless measures are taken restricting the use of the automobile, pollution will increase drastically over the next few years.

Newly enacted federal laws require that states submit implementation plans to the Environmental Protection Agency in order to meet the standards and timetables established by federal law. In addition, the new laws will require that the individual states insure that effective programs are developed to meet the stringent federal air quality standards.

It has been estimated that the motor vehicles account for 93.6 percent of the air pollution in Orange County. To reduce air pollution, the federal government has established air quality standards that must be complied with by 1976. If the air quality standards are to be complied with and the emissions reduced, the motor vehicles will have to undergo drastic changes. Either the type of engine used will have to be greatly altered or eliminated, or driving habits will have to be reduced or restricted.

Climate

Urbanization tends to modify local microclimate, typically raising temperatures, increasing wind turbulence, increasing runoff and thus lowering

humidity and creating air pollution. In planning development of parts of the Coyote Foothills, certain microclimatic factors may be important. In the fall, winter, and spring, southwest slopes tend to be warmer. The midslope position on a southern or southwest facing slope tends to be warmest, while a midslope position on a south slope is generally most favorable for all year comfort.

Recommendations

It is recommended that the City:

- * Formally declare its full support for effectuation of the Federal Air Quality Standards. If more support were realized from more cities the effect, hopefully, would be felt in a quicker return to cleaner air.
- * Encourage procedures and techniques, such as staggering work hours to reduce traffic congestion and a build-up of pollution at peak periods of the day.
- * More actively seek ways of reducing the number of automobile trips by encouraging people to join car pools, to find other methods of getting to and from work, and to try new types of transportation systems. On the City's part some encouragement can be made in the form of actual physical inducement--such as more bike lanes or at least raising their priority.
- * Evaluate the feasibility of equipping all City vehicles with a natural gas system or at least modify them to accept unleaded gasoline.

DOMESTIC WATER

The City of Fullerton has two sources of water for domestic purposes, the major one being a direct import from the Colorado River by the Metropolitan Water District. This water is pumped into city storage tanks after being filtered and treated.

As a supplementary source of water, the City draws from 16 wells located throughout Fullerton, including a seven-well field in northern Anaheim. The water pumped from the ground waterbasin is in reality more Colorado River water that has been pumped into Lake Mathews to percolate into the underground basin. Also, the Santa Ana River water is percolated into the same vast underground water basins for storage and eventual reuse. The well production amounts to about half of the City's water supply.

Quality

One outstanding feature of the Colorado River water is that it is relatively free from contamination and pollution. This is due to special precautions taken to insure that bacteria do not build up in the system when the water is collected from the river. As the water is drawn from the Colorado River, chlorine is added to control bacterial growth.

The Santa Ana River on the other hand is of poor quality because it has already been used two or three times by such upstream cities as San Bernardino, Chino, Colton, and Riverside. This adds to the salt content of the water entering the underground basin. These "salts" actually consist of many chemical impurities such as sodium, chlorides, nitrates, lead, mercury, cyanide, and manganese. This group of dissolved mineral salts is called "total dissolved solids" (TDS).

It has been estimated that the TDS has risen from about 200-300 count in the early 1900's to one of about 600 Parts Per Million in 1961. As late as 1970, the count has risen to 800 PPM, within the State Health Standards of 1,000 PPM, but above the U.S. Public Health Service standards of 500 PPM.

Agriculture is the prime contributor of the salt problem. As water evaporates or percolates into the soil during application, minerals and salts are left behind thereby increasing the concentration of dissolved salts. Also,

farmers in all three counties of Orange, Riverside, and San Bernardino add chemical fertilizers to their crops. The run-off from the crops is another source of TDS which finds its way back into the water system.

According to two ecologists from the University of British Columbia, the Santa Ana watershed has been one of the first areas in North America to experience signals of the approaching limit of its ability to cope with the disturbances by man. It is a strong opinion that this inability to naturally recycle the increasing wastes of man in the watershed is so constricted, that it will be impossible to reverse the historical inertia responsible for this problem.

Water Quality Programs

Historically, consideration of water quality and its true cost to the consumer has been obscured by the urgency to provide enough water to sustain the rapid expansion of the area. It is apparent, however, that Southern California has reached a point where water quality is as important as water quantity. The upstream development of the Santa Ana River area has resulted in very serious degradation of the natural supply that flows to Orange County.

To prevent further deterioration of ground water supplies, the Orange County Water District, under a joint powers agreement, participates with upstream agencies in the formation of basin-wide water quality management programs. The organization formed for this task is the Santa Ana Watershed Planning Agency (SAWPA). SAWPA's membership consists of water districts representing each area affected including the Orange County Water District, where Fullerton is represented on the Board of Directors. This agency's primary responsibility is to analyze alternative methods of controlling water quality in the Santa Ana River Watershed, and to develop a comprehensive basin-wide water quality management plan.

Water Supply

On one side, people can argue that it is time to be researching and investigating other sources of water so that by 1990 the needed new sources will have been located and in production. It could also be said that the City should be researching water reclamation and reverse osmosis processes in order to utilize this ever-increasing precious commodity.

On the other hand, it can be argued that there is a limit to the number of people that any area can support. And as a result, rather than trying to find new sources of water and new sources of developable land, perhaps it is time to limit the number of people living within the states' semi-arid areas. In California, about 60 percent of the population is located in the southern half of the state, while apparently 70 percent of the water resources are located in the northern half.

Recommendations

It is recommended that the City:

- * Seek to provide a higher quality of water for its residents. For example, the amount of dissolved minerals and salts should be lessened by the City's own water conditioning plant. This would increase the life expectancy of household piping, plumbing fixtures, and other water related appliances such as hot water heaters, washers, garbage disposals, dishwashers, etc. This would have an end result of considerably reducing the water-borne consumer costs.
- * Research ways and the feasibility of reclaiming water to use for irrigation purposes. By reclaiming this water and utilizing it to its fullest, there should be a savings generated for the City.

Refer to Water and Mineral Resources Map following page 33 for boundary of water recharge area and water wells.

UNIQUE AREAS

Wildlife

Wildlife is of greater benefit to man than he often realizes. . Man easily forgets that he shares his natural environment with wildlife. Since wildlife is an important link in environmental processes, its displacement or eradication often causes long-term damage to man's environment and consequently to man himself. An example of this phenomenon is the removal of the predator species such as coyotes and hawks, which have been accused of damaging man's possessions. These predators held down the population of rodents, rabbits, and other similar animals that when free from natural predation increase their numbers to levels which man finds to be a nuisance and eventually a health hazard.

Among those pest populations which are reaching nuisance and hazard proportions, are the rat colonies presently living in several parts of the City. Rat complaints in the County overall have risen from 271 in 1964 to about 1,200 in 1970. These disease transmitting rats feed on ornamental fruit trees, tender young shoots, as well as garbage and are found in dense landscaping, ivy, and other ground cover in both low income and affluent areas of the County. Heavy rat populations have been found in many parts of Fullerton with one of the largest invasions into the Sunny Hills area in the northern part of the City.

The two major threats to wildlife are environmental pollutants and loss of habitat to urbanization. An example of the first is pesticide damage. The second threat to wildlife, loss of habitat, is the usual by-product of urbanization. It is possible to keep those areas most abundant in wildlife in a nearly natural condition and interspersed with development as open space and recreation areas. In this way certain forms of wildlife can be maintained close to man to help enrich his environment.

In Fullerton there are several areas that qualify as unique areas which should be preserved in their natural state. These areas are shown on the accompanying map following page 49.

Vegetation

Vegetation is important in the Metropolitan Area because of its role in aesthetics, wildlife habitat, watershed yield, and cooling and purifying

of air. Vegetative cover in Orange County consists of 778 identified varieties of trees and plants, which are grouped into six plant communities: Grassland, Sage-scrub, Chaparral, Oak-woodland, Woodland, and Riparian. These areas are defined on the most part by the elevations and terrain. This somewhat limits those areas that are within the City limits of Fullerton.

Two out of the seven basic Southern California plant communities can be found in and around Fullerton, as shown by the accompanying map. These are the Grassland and Sage-scrub communities.

Of the two natural vegetative groups in the City, the Sage-scrub community is the most prolific. The Grasslands on the lower elevation terrain have been reduced to just a few areas in various parts of the City, while the Sage-scrub vegetative community exists much as it has for many years.

In order for these areas to remain viable for their present wildlife population, they must be preserved in their natural state. These areas are designated on the accompanying map, and if development is going to happen on the remaining undeveloped lands, then the most unusual or unique portions must be designated and preserved in an undisturbed state.

Emery Borrow Pit

The Emery Borrow Pit is State-owned property that has been used for the extraction of sand and gravel in the use of highway construction. The State stopped using this property for a sand and gravel pit when they ran into deposits of silt and clay, which do not make good concrete.

While the State's contractors were busy removing sand and gravel, the Natural History Museum of Los Angeles County has been busy removing and saving large pieces of prehistory supplying the only record of this time span for this area.

This work has been carried on since 1969, mostly by volunteer work from the staff of the Los Angeles County Museum.

The Emery Borrow Pit with its unusual concentration of small and large late pleistocene fossils is very unique to Fullerton and second in importance only to the tar seeps (tar pits) at Rancho La Brea (La Brea tar pits). The late pleistocene era represents the time period from present to 10,000 or 15,000 years ago. Furthermore, the fossils found here represent an entirely different environment and contain animals that were not previously

recorded in this area, the basin, or even the State. The present investigation includes the addition of six new sites besides the original discovery and a minimum of 34 different species. Five of these were not previously known from this vicinity and two of those have never been recorded in the basin before.

Among the larger animals recorded in the Emery Borrow Pit are the mammoth, horse, bison, mule deer, pronghorn, peccory, camel, and the Florida slender limbed camel. The Florida slender limbed camel was thought to be unique to Florida only. Therefore the findings here will have a great influence over the understanding of the geology and paleontology (study of fossils) of the area.

Some of the smaller animals recorded here are the bobcat, striped skunk, ringtailed cat, fox wood rat, duck, turkey, goose, stork, ground sloth, various rabbits, and squirrels.

The geology of the site and its physical components suggest that the Emery Borrow Pit is an estuarine deposit. An estuarine deposit represents the sediment deposited as a stream flows into a salt water body. However, presence of mammalian fauna suggest two other environments. Mammals like the horse, camel, and bison reflect grassland conditions while elk, deer, bobcat, and turkey normally would reflect a more heavily wooded environment.

The future direction of the project will include more collecting of the sites. When the sampling is completed, they will be used to focus the correlation of the Pleistocene era specimens in the Eastern Los Angeles Basin, including carbon dates. With this information, along with previous discoveries and other scientific investigations elsewhere in the basin, the prehistory gap of this whole region will be rapidly closing.

Because of its recognized scientific importance, the Emery Borrow Pit should be developed to its highest potential educational and historical use. The preservation of the main sites for future scientific importance, will serve the Fullerton community interests in an excellent manner, not only from an educational and historical viewpoint, but also from a recreational standpoint.

Previous to the discovery of the Emery Borrow Pit, there were several potentially valuable sites in the Los Angeles Basin. These other sites have been eradicated and lost forever by man's development. Some sites have been paved over by freeways and others have been cleared and/or

covered by urban developments such as housing tracts and shopping centers. There are other scattered individual sites which have very limited recorded data about them. Most of these sites are also lost to scientific rediscovery.

At the time of this writing, the State Division of Highways has declared the Emery Borrow Pit surplus land. The State has appraised the property at current market value and has asked the County of Orange if it is interested in the property. The County Parks and Recreation Department had voiced an opinion in the past that they would like to have this area for part of their park system because there is a deficiency in this part of the County.

Purchasing the Emery Borrow Pit is the first step toward saving this unique area for posterity. The next step is to see that the use that it is put to is compatible with its fragile character. If the County acquires the site, they would develop it into an activity park. The Parks and Recreation Department is aware of the paleontological discoveries made there, and would do their best to combine an educational and a recreational experience for the participating public.

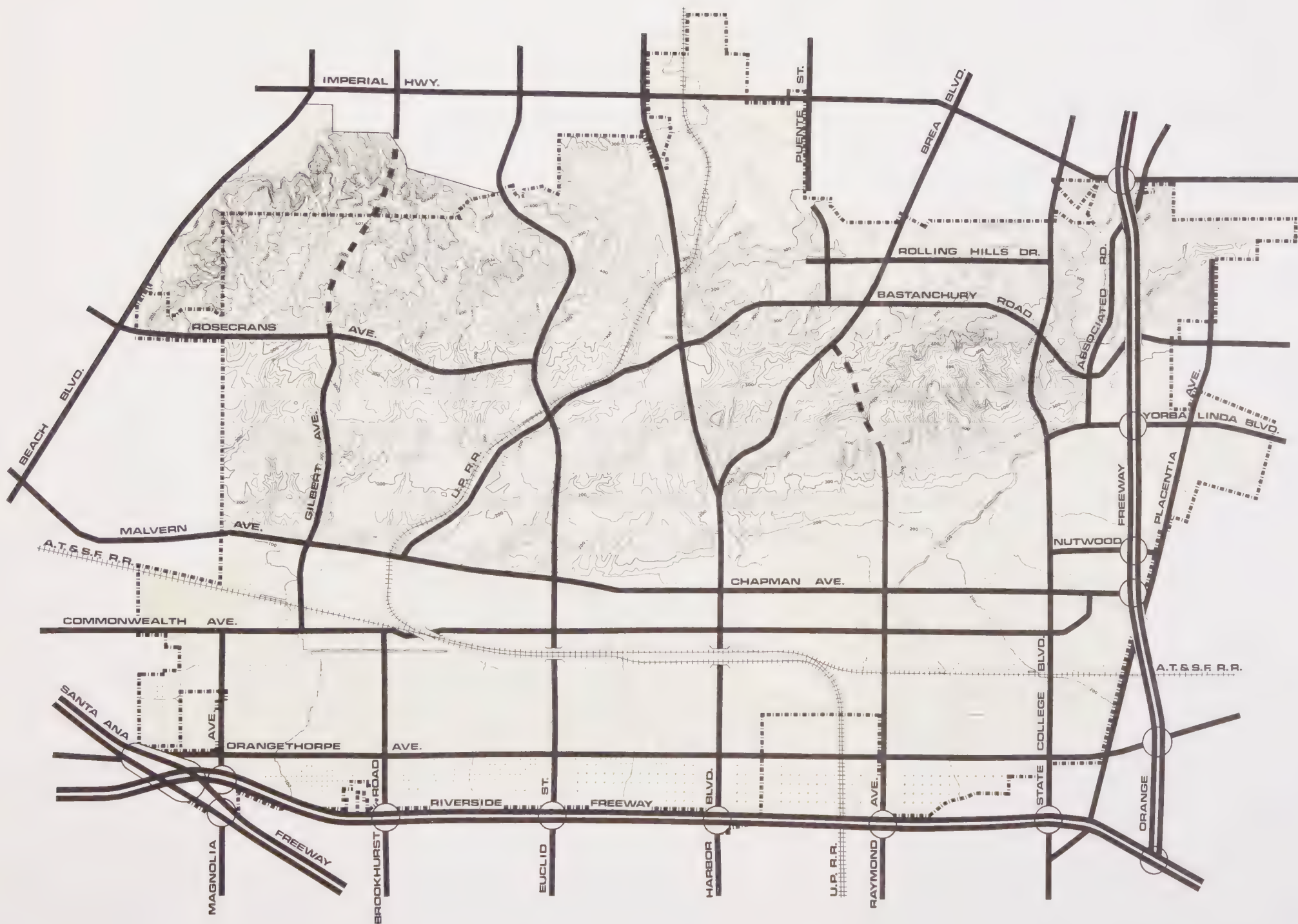
Recommendations

It is recommended that the City:

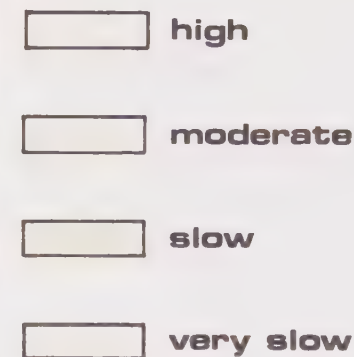
- * Establish a policy to protect and preserve those lands that have been designated or identified as being important wildlife habitat areas.
- * Establish a policy to protect and preserve those species of wildlife and vegetation that have been identified as threatened by depletion.
- * Establish a policy of preserving the few clusters of endemic trees and shrubs in the City.
- * Establish a policy of encouraging both tree preservation and tree planting on public and private property.
- * Establish a policy for the preservation of paleontological and archaeological sites.

- * Formally declare its full support of the Public Antiquities Salvage Team's efforts to preserve any archaeological findings that are uncovered in Fullerton.

- * Formally declare its support to Orange County's efforts to turn the paleontological site discovered by personnel from the Los Angeles County Museum of Natural History into an educational, recreation area.



hydrologic
infiltration rate



fullerton general plan
development services department

Source: USDA; Soil Conservation Service

SERVATION CONSERVATION CONSERVAT

HISTORICAL & CULTURAL

Historically, cultural, and historic preservation in American cities have been characterized by spontaneous efforts only when the imminent threat of demolition arrives. Many a historic building or site has sat for years, slowly disintegrating into a state of disrepair or absurd overgrowth.

All cities have some buildings, sites, or neighborhoods of particular interest or significance. Some may be associated with historic events of local importance. Some may be distinctive in architectural design, site or landscape treatment, or other artistic features. Some might be distinctive because of possessing unique characteristics or may be interesting simply as curiosities. These buildings and areas contribute to the variety of experiences of both the residents and visitors to Fullerton. They also form an important part of this community's historic and cultural heritage, which if lost, cannot be replaced.

This does not mean that just any building or site that has survived through the ages must be saved merely because it is old. However, it does mean that Fullerton, preferably as part of its comprehensive planning program, should make a thorough inventory of its resources and take the necessary steps to conserve those buildings, sites, and areas that are found to contribute significantly to the City's physical and cultural heritage.

The preservation of noteworthy structures from all major stages of the City's growth provides a three-dimensional record of the tastes and values affecting daily lives in the past. While these vestiges of the past are of professional interest to the historian, their appeal is much broader as is seen by the recently surfacing concern for historic preservation by various individuals and groups.

One of Fullerton's oldest and more refined examples of the past has recently been saved from destruction. The Turn-of-the-Century Victorian residence in the 100 block of North Lemon Street was built about 1890 as the residence of one of the City's first doctors. This house was built within the boundaries of the original townsite of Fullerton. This house was condemned by the City when street widening plans were drawn for Lemon Street. The City and the North Orange County Board of Realtors each donated \$2,500 to move the structure to the 25-acre arboretum at California State-Fullerton. The structure will be rehabilitated and used as offices for the arboretum and as a showcase for Turn-of-the-Century architecture in Fullerton.

There are several historically significant structures within the boundary of the original townsite of Fullerton, some of which are older residences, built around the turn of the century. There are one or two which would need some type of maintenance to help preserve the original materials. However, many of them are in a good state of repair, with recently applied paint and constant maintenance. Some residences still have the same trees and shrubs planted when the house was first constructed. This landscaping adds to that nostalgic aura that one supposes existed during their younger days.

Historic Conservation

Historic and cultural conservation can be identified as a program to identify, evaluate, protect, and interpret the more important physical features of Fullerton. Most of these features will be man-made: individual buildings and sites and their immediate environs, and districts containing numerous buildings which have distinct historic, aesthetic, or cultural values attached to them.

"Historic" can be interpreted in various ways. A historic building can be one of distinct merit in a particular architectural style, or it can be a rather mundane structure associated with a notable person or event. Some interpret historic to mean a building that was built during the earlier styles of American architecture, including styles from a variety of periods, such as Georgian, Federal, Victorian, Edwardian, and perhaps even Greek Revival. Others refer to historic in terms of years: a building cannot be historic until it is 50, 75, or perhaps 100 years old. Too strict a definition leads to a limited focus in the preservation effort and ignores those buildings or other features which may be valuable community assets but which fall outside of a sometimes narrow definition. The broader approach that should be considered for conservation would be both "historic" and "cultural" which allows the development of a more flexible and more comprehensive program that is not tied down by preconceived architectural style or age limitations. After all, what is only of "cultural" interest today may possibly be of "historic" interest after many tomorrows. The story of Fullerton's past, as it should be interpreted through a comprehensive preservation program, is a story of continuity, growth, and change spanning various time periods; it should not be considered as the story of a single isolated period.

Recommendations

It is recommended that the City:

- * Develop a comprehensive plan for the development of a historic district that coincides with the original townsite of Fullerton, thereby encompassing the greatest number of unique possibilities.

Refer to the Open Space and Unique Area Map following page 22 for delineation of Civic District, original townsite boundaries and historic sites.

IV SUMMARY OF THE ENVIRONMENTAL MANAGEMENT PROGRAM

- I Park **acquisition** according to needs established by parks study.
- II Development plan for oil lands prior to approval of development. Maintain O-G zoning as holding (open space) zone until development plan is adopted. Utilize vista matrix in development plan.
- III Develop a Hillside Zoning Ordinance, designating allowable development and methods for scenic conservation.
- IV Acquisition of vista points as park lands.

V Scenic Areas

Highways--acquisition of right-of-way and beautification.
Open Space Easements of scenic lands.

VI Open Space Links

Flood control channels.
Trail systems.

- VII Ecological study to pinpoint the most unique natural areas and the development of priorities for their preservation.
- VIII Initiate a geological study of the City to determine the background for both the Seismic Element of the General Plan and the proposed development plan of the Coyote Hills.
- IX Delineate a proposal for a historical and cultural preservation district to coincide with the Civic District boundaries.
- X Study methods for providing a higher quality of water to the residents of the City.
- XI This Element is to be used as a tool in the environmental evaluation and approval of development projects in environmentally sensitive areas. The information contained in this element was assembled to facilitate the research for and writing of environmental impact reports and should be used for that purpose.

APPENDIX

MINERAL RESOURCES

Petroleum

The oil production in the Coyote Hills as of January 1972, totaled 321,628,761 barrels of crude oil. In 1971, the yearly total was 3,298,202, slightly more than one percent of the overall total. It has been estimated that there still remains 30,000,000 barrels or ten more years of normal production. However, with the secondary recovery method of water injection, this production time will probably be shortened to six to ten years (1979 to 1983). The water injection production method will show an initial production increase for the first few years and then decline to the use of a very few wells to extract the remaining oil. These wells, known as stripper wells, can economically pump as little as five or six barrels a day.

As production efforts increase with technological improvements this time element could be foreshortened considerably. Further, there is a point in the economic spectrum when the oil companies will be ready to close down operations, and either convert to another use or sell the land or the development rights to it.

Some of the areas presently under oil production will readily convert to other land uses, while most others will need considerable rehabilitation to remove the scars and damage created by petroleum extraction before other uses are feasible.

Sand and Gravel

Sand and gravel deposits in the upper part of the West Coyote Hills consist of crystalline rocks averaging one to two inches, in matrix of pale yellow-gray to yellow-brown thick bedded to massive sand, with local thin beds of pale olive-gray to light gray-white sandstone, thin bedded, with biotite. Biotite is a dark green mineral bearing matrix of silica. This upper portion ranges from 125 to 197 feet thick. The lower part of the West Coyote Hills consist of about 70% mudstone, 20% sandstone, 10% conglomerate. The mudstone contains a layer of fresh-water mollusks. This lower portion runs to a maximum thickness of 285 feet.

The East Coyote Hills consist of 60% mudstone and 40% sandstone. This mudstone, like the lower portion in West Coyote Hills area, has a layer of

fresh-water mollusks with a thickness of 495 feet. Further, the lower part of the East Coyote Hills is much like that of the West Coyote Hills, with massive ~~thick-bedded~~ pebbly sandstone and marine beds of the San Pedro formation ranging up to 220 feet thick running at irregular 5° unconformity. With the best sand deposits buried under poorer quality formations, East Coyote Hills is rated low as a source of sand and gravel. This makes the western portion of the Coyote Hills the only usable site.

At the present time sand is being removed from the West Coyote Hills under the control of a grading permit. The area being worked is parallel to Rosecrans Avenue at the intersection of Gilbert Street. This area amounts to 125 acres and the grading plan shows an approximate total of 4,000,000 cubic yards of sand to be removed.

Usually when sand is excavated, the site is denuded of all vegetation and topsoil along with the sand beneath. In most cases the sand is removed until the resource is depleted or the confines of the operation cause the sides of the pit to be too steep to negotiate. With an eye to the possibility of future development, this site will be left in a level to slightly sloping terrain. The north perimeter which rises from an elevation of 400 to 475 feet will be cut to a 3:1 slope and planted with a material that will protect it from erosion.

MINIMUM REHABILITATION STANDARDS

Petroleum

With the next likely use of the oil lands being in the realm of open space and residential development, the land should be rehabilitated to more readily receive such uses. This would mean dismantling or extensive remodeling of existing pipe (both above and below grade) distribution systems and appurtenances; removing all old oil sumps and spills; and extensive corrective regrading operations to prevent additional loss due to erosion. Corrective regrading operations should be applied only to those areas that have been approved for action and guided by a grading plan designed by a licensed engineer or geologist. The bare slopes should also be replanted with endemic plant materials to help stabilize those that have erosion and landslide potential. An acceptable slope gradient shall be determined by geological testing.

With the nature of oil production being what it is, with oil spills, oil sumps, rusted equipment and pipelines laying about and an excess of

unrelated grading operations, the process of rehabilitation will be one of the initial unavoidable costs toward a new use.

Sand

There are several alternatives to rehabilitation of sand and gravel sites. The first alternative is to do nothing to the site, let it lie after it is depleted. This method has been eliminated due to the fact that in order to operate one of these sites, the contractor has to take out a grading permit with the City building department. The contractor has to furnish the department a set of plans showing how much sand they are going to remove and in what shape they are going to leave the site. Here is where the City's influence can be felt. The agency reviewing the grading plans can establish operating and rehabilitation standards. These standards should minimize the operational and environmental conflicts by:

- * Developing operational standards that will reduce the noise, dust, and vibrations associated with the extraction process.
- * The establishment of criteria that will encourage a more aesthetic site such as long setbacks, and landscaping used as a buffer.

At the same time, rehabilitation standards must be established to enhance the finished product. These standards should be:

- * Standard gradients of finished slopes.
- * Require an approved ground covering planting system that would hold the slopes and not let them become eroded and barren. In some cases, depending on the location of the site and the development potential, it would be adequate to only restore the natural vegetation to a compatible slope.

A second approach to rehabilitation is to wait until the site is completely played out before regrading and planting to stabilize the slopes. The regrading operation would be determined by what use the land would be put to next. An advantage of this method is that each operation could be

carried out separately without conflicting with each other. A disadvantage would be added costs.

A third approach to land rehabilitation would be to run both extracting and rehabilitation operations concurrently. This progressive rehabilitation takes into consideration neighborhood and operational conflicts which normally arise near an operating site, and attempts to eliminate them by screening the site from view and reducing noise, dust, and the unnecessary scarring of hillsides. This technique should have greater appeal to those producers who are concerned with the community welfare and the appearance of their facilities.

AIR

Physical Properties of Air Pollution

Of the total pollutant released into the air daily in Orange County, about 70 percent is carbon monoxide (CO), 20 percent is an organic compound called hydrocarbon (HO), and nitrogen oxide (NOx) accounts for about seven percent of the total. The balance is primarily particulate matter from soot, dust, and ash.

The largest percentage of pollutants is a result of the presence of the automobile. However, population densities and the resultant presence of the automobile are not solely responsible for air pollution; the topography, climate, and meteorology of the region are also important, with such factors as temperature inversions and sea-land breezes being the most significant.

Temperature inversions are present during more than half the days of the year when air movement is stabilized due to the presence of a layer of warmer air over the cooler air below it. The upper layer acts as a cover or lid that prevents the lower layer from rising; this in turn traps air near the ground, thus permitting a building up of eye-irritating pollutants.

Effects of Smog

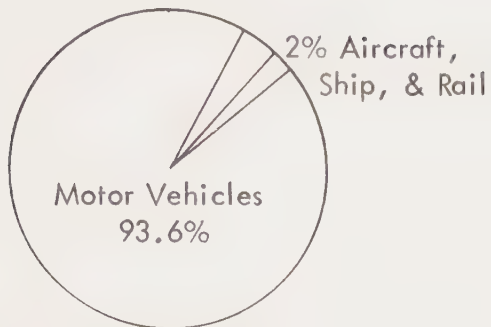
Smog irritates the eyes, nose, and throat; affects breathing; reduces visibility; causes cracking in rubber; and damages growing plants. With regard to the latter, it is indicated that Southern California smog can cut the yield of a citrus tree by 50 percent.

Some atmospheric pollutants corrode metals, rot nylon hose, and discolor and destroy painted surfaces. However, the most serious concern about smog is the effect it has on those who breathe it. Obviously, the degree of irritants depends primarily upon the type and concentration of pollutants, and upon individual susceptibility.

Dramatic and disastrous episodes of acute air pollution have brought illness and death to thousands of people in various parts of the United States and Europe. Scientists are studying the relationship of air pollution to lung cancer, tissue damage, and respiratory diseases such as bronchitis, emphysema, and bronchial asthma.

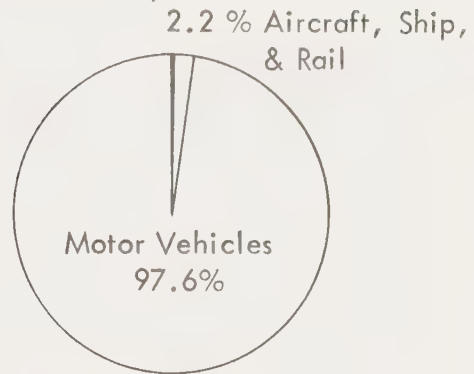
The Orange County Air Pollution Control District, which includes the City of Fullerton, has been monitoring the quality of the air in Orange County since 1955. The latest count, showing 1971 averages of all combined emissions per day, equals 2,401 tons, 93.6 percent of which comes from motor vehicles. Further breakdown into the component parts is shown on the following pie charts:

4% Stationary Sources



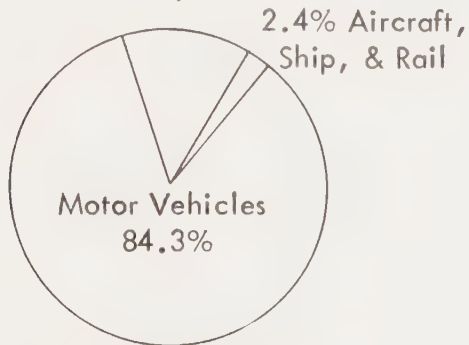
TOTAL ALL EMISSION
2,401 TONS/DAY

0.1% Stationary Sources



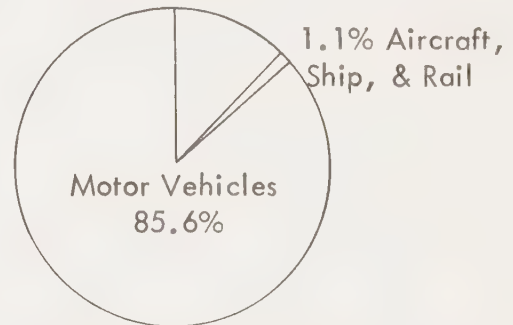
CARBON MONOXIDE
1,796 TONS/DAY

13.5% Stationary Sources



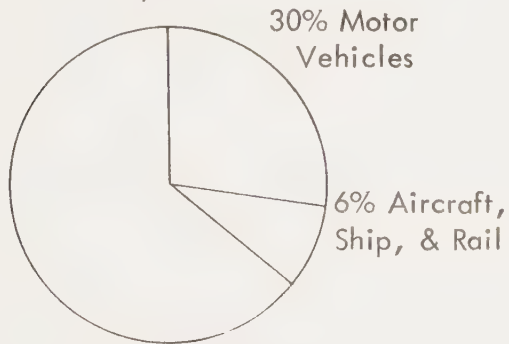
HYDROCARBONS
370 TONS/DAY

12.4% Stationary Sources



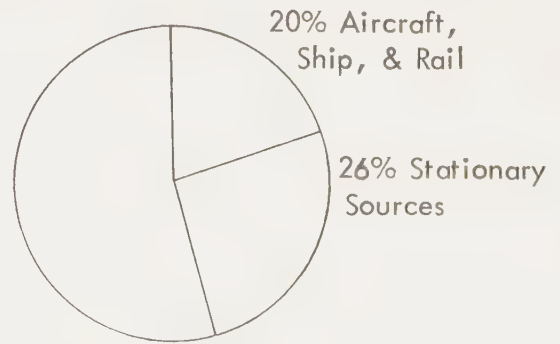
OXIDES OF NITROGEN
188 TONS/DAY

64% Stationary Sources



SULFUR OXIDES
24.4 TONS/DAY

53% Motor Vehicles



PARTICULATE MATTER
21.5 TONS/DAY

Source: Orange County APCD

From these charts it is clear that the major source of air pollutants is the motor vehicle. Stationary sources are monitored constantly and methods for eliminating polluting emissions are improving. A concentrated effort is required to reduce motor vehicle emission if air quality is to return to the minimum standard now established by Federal law.

According to two ecologists from the University of British Columbia, the Santa Ana watershed has been one of the first areas in North America to experience signals of the approaching limit of its ability to cope with the disturbances by man. It is a strong opinion that this inability to naturally recycle the increasing wastes of man in the watershed is so constricted, that it will be impossible to reverse the historical inertia responsible for this problem.

DOMESTIC WATER

Most of the water used in Fullerton is imported from the Colorado River. This source will be greatly limited when Arizona begins to utilize more of its share. As this amount decreases the California Water Project water (Feather River) will take its place. The Feather River water has a total dissolved solids count of from 100 to 230 PPM. The future water quality for the City will depend on the mixing ratio of the two river sources and to what degree the upper reaches of the Santa Ana River continue to be polluted.

HISTORICAL & CULTURAL

There are several buildings in Fullerton that deserve recognition and possible preservation as having historical and cultural value to the City. They are listed below:

- * The residence at 233 East Amerige which was built between 1890-1900, originally thought to have been built for George Amerige, one of the original founders of Fullerton.
- * The residence at 315 East Amerige believed to have been built during the same period of time only with the use of redwood and handmade square nails.
- * The Church of Religious Science on the corner of Amerige and Pomona Avenues built in 1909 as the First Methodist Church.
- * The residence at 137 West Chapman was originally built about 1900 as a blacksmith shop located on Harbor Boulevard in the downtown area. It was remodeled and made into a house in 1905, and moved to Harbor Boulevard and Chapman Avenue. Later it was moved to its present location. The redwood used in the subsequent remodeling came from the old Hotel Del Campo, built in Anaheim in 1888.
- * The residence at 137 East Orangethorpe was built about 1878 by the pioneer Rorden family. The pump house and well are still there and in fair condition.
- * The residence at 111 West Orangethorpe is reported to be 89 years old, built in 1884 by the pioneer Burdof family.
- * Of several homes built on Truslow Avenue in the 1890's only two have not been heavily disfigured by remodeling; the private residence at

122 East Truslow Avenue and the house at 147 East Truslow Avenue with a pump house still intact.

- * The residence at 434 West Amerige Avenue, was built in a walnut grove about 1890, then at the edge of town. Two old walnut trees are still growing just as they were planted even though the original house has been remodeled somewhat.
- * The residence at 516 West Amerige Avenue built about 1890.
- * The residence at 515 East Chapman was built for the Heterbrink family in 1914.
- * The private school at 2025 East Chapman was built as a residence for the W.H. Hale family in 1905.
- * The residence at 2000 East Wilshire was built by the pioneer des Granges family in 1872 making it, perhaps, the oldest building in Fullerton. The pump house was built about 1900. The pepper trees were planted in the Spring of 1873.

There are several more structures in Fullerton that may warrant an equal amount of attention. Some structures have been moved from their original sites just to save them from the bulldozer. The original children's library has been transplanted from its original site to a spot in Hillcrest Park and is now being used for a Girl Scout meeting place. The building was built in 1927. The first real estate office in the original townsite of Fullerton, built by the Amerige borthers in 1887, is on display in Amerige Park across from City Hall.

UNIQUE AREAS

In Orange County there are at least six distinct groups of native vegetative cover. Within each group is a range of natural wildlife that is dependent upon it for survival. Together the vegetative group and their associated wildlife form an ecological community.

Two of these "communities" exist in Fullerton to form unique areas within the urban fringe.

Grassland Community

Grasslands are usually found at lower elevations, generally below 1,500 feet. The lower slopes of the Coyote Hills can be classified as such. Due to the urbanization process, most of these native communities have either been greatly altered or destroyed completely. Therefore, artificial environments have evolved which are conducive to increases in both beneficial and destructive insects, birds, and rodents.

The greater bulk of the grasses in these grassland communities is brome grass, wild barley and wild oats. These are all seed-producing plants that begin to grow in December and die out at the end of each season. During the summer the grassland community is composed of thoroughly dried plants.

Seed-eating birds, various species of mice, and pocket gophers characterize the major inhabitants of the grassland community. The predators of the community are the coyote and a group of predatory birds. Barn owls exact a large toll of gophers and mice while the cooper hawks prey on the seed-eating birds.

Plants and Animals of the Grassland Community

Plants:

Johnson grass	Slender wild oat	Wild barley
Spear grass	Yellow mustard	Peppergrass
Beard grass	Filaree	Hyacinth
Cactus	Wild pansy	Buttercup
Brome grass	Wild onion	Chocolate lily
Golden-top grass	Buckwheat	California sagebrush
Wild oat	Shooting star	California poppy

Amphibians & Reptiles:

California toad	Striped racer	Western fence lizard
San Diegan gopher snake	Ring-necked snake	Side-blotched lizard
California king snake	Horned lizard	Pacific rattlesnake

Sage-scrub Community

The greyish-green sage-scrub which covers a large area of the Coyote Hills can be categorized into two classes--the great basin sagebrush and the coastal or California sagebrush.

The great basin sage is generally found in the higher regions of Orange County's mountains above 4,000 feet. The coastal sage usually dominates the native foothills below 3,000 feet. This sage community has been described as an "impoverished chaparral", containing some of the same species commonly found in the chaparral but lacking the density and height characteristics of that community. It is usually of medium-density and does not greatly impede walking. Both varieties of sage usually average less than three feet high.

Besides the California sagebrush, this community also includes abundant amounts of buckwheat, which inhabit dry hillsides and other stable terrain. The purple, black, and white sages are also found in this community.

This community is the most favorable for the largest number of rodent species including the dulzura mouse, gambel mouse, short-eared pocket mouse and the harvest mouse. Because of the abundance of larger growth for protection, the various rabbit species make their residence here.

The number and kinds of predatory mammals increase commensurate with their food supplies. Some coyotes are found in the sagebrush communities as well as an occasional bobcat or fox.

The dominant birds of this community include the audubon warblers that forage in and from the laurel sumac, the California valley quail and the gambel sparrows that forage among the smaller shrubs. The laurel sumac is an extremely important shrub in this area, as the following animals are dependent upon it one way or another for part of their existence: audubon warbler, California valley quail, roadrunner, hermit thrush, California thrasher, bushtit, woodrot, and the California mouse and brush rabbit. This shrub begins putting on new growth in March and mature fruits are available to the various animals from September to January.

Plants and Animals of the Sage-Scrub Community

Plants:

Melic grass	Golden-star	White sage
Soap plant	Hedge mustard	California sagebrush
Slender wild oat	Fileree	Deerweed
Wild oat	Laurel sumac	Lemonade berry
Buckwheat	Purple sage	Live forever
Wild onion	Black sage	Wild rose

Reptiles:

Brown-shoulder lizard	California king snake	Speckled rattlesnake
San Diego Horned lizard	Boyle's king snake	Red diamond rattlesnake
Gopher snake	Black-headed snake	Western fence swift
Worm snake	Rosy boa	Pacific rattlesnake
Blue-tailed skink		

Birds:

Meadowlark	Common nighthawk	Cassin kingbird
Black-chinned sparrow	Cooper hawk	Brown towhee
Gambel sparrow	California quail	Black phoebe
Lincoln sparrow	Mourning dove	Say phoebe
Lark sparrow	Roadrunner	Hermit thrush
Bell sparrow/sage sparrow	Barn owl	Audubon warbler
Shrike	Dusky poorwill	California thrasher
Red-tail hawk	Anna's hummingbird	Mocking bird

Mammals:

Pocket gopher	San Diego jackrabbit
Gambel kangaroo rat	San Diego cottontail
California ground squirrel	Ashy brush rabbit
Pacific pallid bat	California valley coyote
California spotted skunk	California gray fox
Southern California striped skunk	



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